What is claimed is:

1. An optical waveguide device comprising:

an electro-optical crystal substrate having a top surface and a bottom surface;

an optical waveguide path formed within a surface of the electro-optical crystal substrate;

at least one electrode positioned above the optical waveguide path for applying an electric field to the optical waveguide path;

a silicon titanium oxynitride layer; and

a connector for interconnecting the silicon titanium oxynitride layer to another surface of the electro-optical crystal substrate that is opposite to the surface in which the optical waveguide path is formed.

2. The optical waveguide device of claim 1, wherein an undoped silicon dioxide layer is positioned on the electro-optical crystal substrate for optical confinement of an optical signal within the optical waveguide path.

3. The optical waveguide device of claim 2, wherein the silicon titanium oxynitride layer is configured to provide thermal stabilization; and

an additional silicon titanium oxynitride layer for temporal stabilization is positioned between the silicon titanium oxynitride layer and the electro-optical crystal substrate.

4. The optical waveguide device of claim 3, wherein a ratio of silicon to titanium in the additional silicon titanium oxynitride layer for temporal stabilization is greater than a ratio of silicon to titanium in the silicon titanium oxynitride layer for thermal stabilization.

5. The optical waveguide device of claim 3, wherein the additional silicon titanium oxynitride layer for temporal stabilization is doped with indium.

6. The optical waveguide device of claim 4, wherein the additional silicon titanium oxynitride layer for temporal stabilization is formed with a gradient change in the ratio of silicon to titanium.

7. The optical waveguide device of claim 1, wherein an additional silicon titanium oxynitride layer for temporal stabilization is positioned between the silicon titanium oxynitride layer and the electro-optical crystal substrate; and

the silicon titanium oxynitride layer is configured to provide thermal stabilization.

8. The optical waveguide device of claim 7, wherein the additional silicon titanium oxynitride layer for temporal stabilization is doped with a rare earth metal.

9. The optical waveguide device of claim 7, wherein a ratio of silicon to titanium in the additional silicon titanium oxynitride layer for temporal stabilization is greater than a ratio of silicon to titanium in the silicon titanium oxynitride layer for thermal stabilization.

10. The optical waveguide device of claim 7, a ratio of silicon to titanium in the additional silicon titanium oxynitride layer for temporal stabilization is formed with a gradient change in the ratio of silicon to titanium.

11. The optical waveguide device of claim 1, wherein the silicon titanium oxynitride layer is for thermal and temporal stabilization and positioned on the electro-optical crystal substrate; and

a ratio of silicon to titanium in the silicon titanium oxynitride layer is formed with a gradient change in the ratio of silicon to titanium.

12. The optical waveguide device of claim 11, wherein the silicon titanium oxynitride layer is doped with a rare earth metal.

13. An optical waveguide device comprising:

a Z-cut electro-optical crystal substrate having a top surface with a Z face and a bottom surface with a Z face;

an optical waveguide path formed within the top surface of the electro-optical crystal substrate;

a buffer layer structure, including a thermal stabilization buffer layer comprising silicon, an element in column 4 (IVB) of the periodic table, oxygen, and nitrogen, positioned above the optical waveguide path;

at least one electrode positioned on the buffer layer structure for applying an electric field to the optical waveguide path; and

a connecting layer on a side surface of the electro-optical crystal substrate for interconnecting the thermal stabilization buffer layer to the bottom surface of the electro-optical crystal substrate.

14. The optical waveguide device of claim 13, wherein an undoped silicon dioxide layer is positioned on the top surface of the electro-optical crystal substrate for optical confinement of an optical signal within the optical waveguide path.

15. The optical waveguide device of claim 14, wherein a temporal stabilization buffer layer comprising silicon, an element in column 4 (IVB) of the periodic table, oxygen, and nitrogen, is positioned between the thermal stabilization buffer layer and the electro-optical crystal substrate.

16. The optical waveguide device of claim 15, wherein a ratio of nitrogen to oxygen in the temporal stabilization buffer layer is less than a ratio of nitrogen to oxygen in the thermal stabilization buffer layer.

17. The optical waveguide device of claim 15, wherein the temporal stabilization buffer layer is doped with a rare earth metal.

18. The optical waveguide device of claim 16, wherein the temporal stabilization buffer layer is formed with a gradient change in the ratio of nitrogen to oxygen.

19. The optical waveguide device of claim 13, wherein a temporal stabilization buffer layer is positioned between the thermal stabilization buffer and the top surface of the electro-optical crystal substrate.

20. The optical waveguide device of claim 19, wherein the temporal stabilization buffer layer is doped with a rare earth metal.

21. The optical waveguide device of claim 19, wherein a ratio of nitrogen to oxygen in the temporal stabilization buffer layer is less than a ratio of nitrogen to oxygen in the thermal stabilization buffer layer.

22. The optical waveguide device of claim 21, wherein the temporal stabilization buffer layer is formed with a gradient change in the ratio of nitrogen to oxygen.

23. The optical waveguide device of claim 13, wherein the thermal stabilization buffer layer is also configured to provide for temporal stabilization and positioned on the electro-optical crystal substrate; and

a ratio of nitrogen to oxygen in the buffer layer is formed with a gradient change in the ratio of nitrogen to oxygen.

24. The optical waveguide device of claim 23, wherein the buffer layer is doped with a rare earth metal.

25. The optical waveguide device of claim 13, wherein the connecting layer comprises one of conductive paint, solder, semiconductor, ceramic and conductive epoxy.

26. A method for forming an optical waveguide device comprising the steps of:

forming an optical waveguide path within a surface of the electro-optical crystal substrate;

forming a buffer layer comprising silicon, an element in column 4 (IVB) of the periodic table, oxygen, and nitrogen, positioned above the optical waveguide path;

forming at least one electrode positioned above the buffer layer for applying an electric field to the optical waveguide path;

forming a connecting means for interconnecting the thermal stabilization buffer layer to another surface of the electro-optical crystal substrate that is opposite to the surface in which the optical waveguide path is formed.

27. The method for forming an optical waveguide device of claim 26, wherein the buffer layer is sputter deposited using a target comprised of silicon nitride and a nitride of an element in column 4 (IVB) of the periodic table.

28. The method for forming an optical waveguide device of claim 27, wherein the buffer layer is sputter deposited in atmosphere containing O_2 and N_2.

29. The method for forming an optical waveguide device of claim 27, wherein the target further comprises a rare earth metal.

30. The method for forming an optical waveguide device of claim 27, wherein an additional target containing a rare earth metal is exposed while the buffer layer is sputter deposited.